PORTABLE ELECTRONIC TERMINAL APPARATUS HAVING A PLURALITY OF DISPLAYS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. §119 to Japanese patent application No. JPAP11-086099 filed on Mar. 29, 1999, the entire contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to a portable electronic terminal apparatus, and more particularly to a portable electronic terminal apparatus which includes a flip panel and a plurality of displays.

2. Discussion of the Background

Recently, the amount of information for electronic apparatuses to exchange has greatly been increased through data communications verification because of rapid proliferation of portable communications equipment and an establishment of the corresponding infrastructure. In such a circumstance, portability as well as data communications capability has become more important, especially in a portable electronic apparatus (e.g., a cellular mobile phone, a personal assistant device, and the like).

In general, it is difficult to obtain both portability and visibility at the same time in a portable electronic apparatus. Such an apparatus needs to be lighter and smaller for increased portability. For instance, the area reserved for the display of a portable electronic apparatus can be reduced to increase portability. Typically, a portable electronic apparatus has a single display on which various kinds of information are selectively shown as user instructions; such as a screen scroll function, a function for switching over to another function, and so forth. In such a portable electronic apparatus, the user is usually required to perform complex manipulation of the display to finally read incoming mail and/or information received from information service providers.

As one example of the portable electronic apparatus, a mobile cellar phone, as illustrated in FIG. **1**, is provided to overcome the above-mentioned problem. The mobile cellar phone of FIG. **1** includes a main body **51**, a display **51**, an antenna **52**, and a loudspeaker **53**. In this mobile cellar phone, a mechanical key pad is not used, instead a touch-sensitive display is employed so as to fit in a relatively small area. Since the touch-sensitive display does not provide a tactile "click" response, the user is required to keep watching the display to make sure the input is entered properly. Therefore, the operability of the mobile cellar phone of FIG. **1** is reduced.

SUMMARY OF THE INVENTION

The present invention provides a novel portable electronic terminal apparatus which includes a main body, an information input mechanism, a plurality of displays, a communications mechanism, and a flip panel. The main body has a hollow section. The information input mechanism enables input of information, including data and instructions. A plurality of displays display the information input through the input mechanism. The communications mechanism transmits and receives the input information. The flip panel is movably mounted on the main body and is configured to rotate to open and close about a side edge portion of the flip panel. This flip panel is retracted in the hollow section of the main body when closed. In addition, one of the plurality of displays is mounted on the side of the flip panel that is exposed when closed.

One of the plurality of the displays may be mounted on a surface of the hollow section of the main body.

Another display may be mounted on another side of the flip panel.

One of the displays operates when the flip panel is closed, and the other display operates when the flip panel is opened.

Each of the displays may be a polymer-film liquid crystal display.

The displays may selectively be used by a user instruction input through the information input mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the present invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

FIG. **1** is a diagram showing an overall view of a conventional mobile cellar phone;

FIG. **2** is a diagram showing an overall view of a portable electronic terminal apparatus according to an embodiment of the present invention;

FIG. **3** is a diagram showing the location of an open button of the portable electronic terminal apparatus of FIG. **2**;

FIG. **4** is a diagram showing the portable electronic terminal apparatus of FIG. **2** with a flip panel opened;

FIG. **5** is a diagram showing a structure of a display included in the portable electronic terminal apparatus of FIG. **2**;

FIGS. **6** and **7** are diagrams for showing an exemplary way of reading incoming mail on the portable electronic terminal apparatus of FIG. **2**;

FIGS. **8** and **9** are diagrams showing a modified portable electronic terminal apparatus based on the portable electronic terminal apparatus of FIG. **2**; and

FIGS. **10** and **11** are diagrams showing another modified portable electronic terminal apparatus based on the portable electronic terminal apparatus of FIG. **2**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In describing preferred embodiments of the present invention illustrated in the drawings, specific terminology is employed for the sake of clarity. However, the present invention is not intended to be limited to the specific terminology so selected and it is to be understood that each specific element includes all technical equivalents which operate in a similar manner.

Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, and more particularly to FIG. **2** thereof, there is illustrated a portable electronic terminal apparatus **100** according to an exemplary embodiment of the present invention. The portable electronic terminal apparatus **100** includes a main body **1**, an antenna **2**, a loudspeaker **3**, a flip panel **4**, a first display **5**, a data entry panel **6**, a microphone **7**, and a button **8**.

In this exemplary embodiment, the main body **1** has a front surface divided into upper, middle, and lower regions